Claims

1. A method of imaging of an animate human or non-human animal body, which method comprises: administering parenterally to said body a particulate material comprising a matrix or membrane material and at least one contrast generating species, which matrix or membrane material is responsive to a pre-selected physiological parameter whereby to alter the contrast efficacy of said species in response to a change in the value of said parameter; generating image data of at least part of said body in which said species is present; and generating therefrom a signal indicative of the value or variation of said parameter in said part of said body.

2. A method as claimed in claim 1 wherein the physiological parameter is pH, temperature, pressure, carbon dioxide tension, enzyme activity, tissue electrical activity, tissue diffusion or ion concentration.

3. A method as claimed in claim 2 wherein the physiological parameter is pH, temperature or pressure.

4. A method as claimed in ~~any one of claims 1 to 3~~ claim 1 wherein the response of the matrix or membrane material to a change in the value of the pre-selected physiological parameter is a change in matrix or membrane permeability or chemical or physical breakdown of the matrix or membrane material.

5. A method as claimed in ~~any one of claims 1 to 4~~ claim 1 wherein the imaging technique is MRI, scintigraphy or ultrasound or X-ray imaging.

6. A method of MRI as claimed in claim 5 wherein the contrast generating species is a paramagnetic and/or superparamagnetic compound and/or an iron oxide or a gadolinium or dysprosium compound.

7. A method of ultrasound imaging as claimed in claim 5 wherein the contrast generating species is an encapsulated gas selected from air, a fluorohydrocarbon, sulphur hexafluoride and a perfluorocarbon.

8. A method of ultrasound imaging as claimed in claim 5 wherein the particulate material comprises a temperature, pressure or pH sensitive emulsion or suspension.

9. A method as claimed in claim 1 wherein said particulate material is in combination with a targeting ligand for a cell or receptor of interest.

10. A method as claimed in claim 1 wherein the membrane material forms a vesicle.

11. A method as claimed in claim 1 wherein the matrix or membrane material is selected from a phospholipid and a physiologically acceptable polymer.

12. A method as claimed in claim 10 ~~or 11~~ wherein the membrane material forms a temperature or pH sensitive liposome.

13. A method as claimed in claim 12 wherein the liposome is stable at normal body temperature but exhibits increased water permeability or leakage at temperatures greater than normal body temperature.

14. A method as claimed in claim 1 wherein the contrast efficacy is altered by interaction between the contrast

generating species and the environment in the part of the animal body where the matrix or membrane material has responded to a change in the value of the physiological parameter.

15. A method as claimed in ~~any one of the preceding claims~~ claim 1 wherein the physiological parameter is temperature and wherein the change in the value of said parameter is related to cancer, cardiovascular disease or inflammation or results from the treatment of hyperthermia in the animal body.

16. A method as claimed in ~~any one of claims 1 to 14~~ claim 1 wherein the physiological parameter is pH and wherein the change in the value of said parameter is caused by cancer, cardiovascular disease, osteoporosis, inflammations or autoimmune diseases.

17. A method as claimed in any one of claims 1 to 16 wherein in addition to the generation of a signal indicative of the value or variation of a pre-determined physiological parameter in a part of the animal body in which the contrast generating species is present, an anatomical image of the same part of the animal body is generated.

18. A method as claimed in claim 17 wherein no contrast agent is used to generate the anatomical image.

19. A method as claimed in claim 17 wherein a contrast agent is used in the generation of the anatomical image.

20. A method as claimed in claim 19 wherein the same contrast agent is used to generate a signal relating to the pre-selected physiological parameter and the anatomical image.

21. A contrast medium for imaging of a physiological parameter, said medium comprising a particulate material the particles whereof comprise a matrix or membrane material and at least one contrast generating species, said matrix or membrane material being responsive to said physiological parameter to cause the contrast efficacy of said contrast generating species to vary in response to said parameter.

22. The use of a contrast generating species for the manufacture of a particulate contrast medium for use in a method of diagnosis comprising generating a signal indicative of the value of said physiological parameter, the particles of said contrast medium comprising a matrix or membrane material and at least one contrast generating species, said matrix or membrane material being responsive to said physiological parameter to cause the contrast efficacy of said contrast generating species to vary in response to said parameter.

23. A method of imaging of an animate human or non-human animal body, which method comprises:

administering parenterally to said body at least one contrast generating species the contrast efficacy whereof is responsive to a change in value of a pre-selected physiological parameter;

generating image data of at least part of said body in which said species is present; and

generating therefrom a signal indicative of the value or variation of said parameter in said part of said body and also generating an anatomical image of the same part of the animal body.

add B3

add D7